

IN THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

Claim 1. (currently amended) An apparatus for removal rate profile manipulation during a chemical mechanical planarization (CMP) process, comprising:

a polishing pad stretched between a first and second rotating drums;

an actuator capable of vertical movement perpendicular to a polishing surface of the [[a]] polishing pad, the actuator being positioned between the first and second rotating drums and capable of flexing the polishing pad independently of a pad support device that is positioned between the first and second rotating drums; and

an actuator control mechanism in communication with the actuator, the actuator control mechanism capable of controlling an amount of vertical movement of the actuator, wherein the actuator provides local flexing of the polishing pad to achieve a particular removal rate profile.

Claim 2. (original) An apparatus as recited in claim 1, wherein the actuator is further capable of horizontal movement parallel to the polishing surface of the polishing pad.

Claim 3. (original) An apparatus as recited in claim 2, wherein the actuator is a double roller.

Claim 4. (original) An apparatus as recited in claim 3, wherein the double roller comprises a first roller above the polishing pad and a second roller below the polishing pad.

Claim 5. (original) An apparatus as recited in claim 4, wherein the double roller is capable of flexing the polishing pad toward a wafer being planarized and away from the wafer being planarized.

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Claim 6. (original) An apparatus as recited in claim 2, wherein the actuator is a double slider.

Claim 7. (currently amended) An apparatus as recited in claim ~~[[3]]~~ 6 , wherein the double slider comprises a first slider above the polishing pad and a second slider below the polishing pad.

Claim 8. (original) An apparatus as recited in claim 7, wherein the double slider is capable of flexing the polishing pad toward a wafer being planarized and away from the wafer being planarized.

Claim 9. (original) An apparatus as recited in claim 7, wherein each slider projects a liquid toward the polishing pad to reduce friction.

Claim 10. (original) An apparatus as recited in claim 7, wherein each slider projects a gas toward the polishing pad to reduce friction.

Claim 11. (currently amended) A method for manipulating a removal rate profile during a chemical mechanical planarization (CMP) process, comprising:

AI providing an actuator capable of vertical movement perpendicular to a polishing surface of a polishing pad stretched between first and second rotating drums, the actuator capable of flexing the polishing pad between the first and second rotating drums and independently of a pad support device; and

altering a vertical position of the actuator relative to the polishing pad to locally flex the polishing pad to achieve a particular removal rate profile.

Claim 12. (original) A method as recited in claim 11, further comprising the operation of altering a horizontal position of the actuator parallel to the polishing surface of the polishing pad to locally flex the polishing pad to achieve a particular removal rate profile.

Claim 13. (original) A method as recited in claim 12, wherein the actuator is a double roller comprising a first roller above the polishing pad and a second roller below the polishing pad.

Claim 14. (original) A method as recited in claim 12, wherein the actuator is a double slider comprising a first slider above the polishing pad and a second slider below the polishing pad.

11 Claim 15. (original) A method as recited in claim 14, wherein each slider projects a liquid toward the polishing pad to reduce friction.

Claim 16. (original) A method as recited in claim 14, wherein each slider projects a gas toward the polishing pad to reduce friction.

Claim 17. (currently amended) A system for removal rate profile manipulation during a chemical mechanical planarization (CMP) process, comprising:

a polishing pad capable of planarizing a wafer, the polishing pad being stretched between first and second rotating drums, wherein the polishing pad comprises a flexible material;

a pad support device disposed below the polishing pad, the pad support capable of providing reactive force to the wafer during a CMP process;

an actuator capable of vertical movement perpendicular to a polishing surface of the polishing pad and horizontal movement parallel to the polishing pad, the actuator capable of flexing the polishing pad independently of the pad support device and between the first and second rotating drums; and

an actuator control mechanism in communication with the actuator, the actuator control mechanism capable of controlling an amount of vertical and horizontal movement of the actuator, wherein the actuator provides local flexing of the polishing pad to achieve a particular removal rate profile.

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Claim 18. (original) A system as recited in claim 17, wherein the actuator is a double roller comprising a first roller above the polishing pad and a second roller below the polishing pad.

Claim 19. (original) A system as recited in claim 17, wherein the actuator is a double slider comprising a first slider above the polishing pad and a second slider below the polishing pad.

Claim 20. (original) A system as recited in claim 19, wherein each slider projects a liquid toward the polishing pad to reduce friction.

Claim 21. (New) An apparatus for removal rate profile manipulation during a chemical mechanical planarization (CMP) process, comprising:

a double roller actuator capable of vertical movement perpendicular to a polishing surface of a polishing pad, the double roller actuator capable of flexing the polishing pad independently of a pad support device; and

an actuator control mechanism in communication with the double roller actuator, the actuator control mechanism capable of controlling an amount of vertical movement of the double roller actuator, wherein the double roller actuator provides local flexing of the polishing pad to achieve a particular removal rate profile.

A1 Claim 22. (New) An apparatus for removal rate profile manipulation during a chemical mechanical planarization (CMP) process, comprising:

a double slider actuator capable of vertical movement perpendicular to a polishing surface of a polishing pad, the double slider actuator capable of flexing the polishing pad independently of a pad support device; and

an actuator control mechanism in communication with the double slider actuator, the actuator control mechanism capable of controlling an amount of vertical movement of the double slider actuator, wherein the double slider actuator provides local flexing of the polishing pad to achieve a particular removal rate profile.

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